

ABSTRACT OF THE DISCLOSURE

METHOD FOR INCREASING THE SIGNAL-TO-NOISE RATIO IN IR-BASED EYE GAZE TRACKERS

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10 The accuracy of eye gaze trackers is used in the
presence of ambient light, such as sunlight, is improved.
The intensity of sunlight and its constituent wavelengths of
light, such as infrared radiation, do not vary rapidly.
During the inter-frame interval of video cameras (typically
1/30th of a second), the level of ambient infrared radiation
can be considered nearly constant. In a first embodiment,
the modulation of the IR illuminator is synchronized with
15 each frame of the camera such that the illuminator
alternates between on and off with each subsequent frame. If
one considers a sequence of such frames, then the image
captured in the first frame contains both the illuminator
signal and the ambient radiation information. The image
20 captured in the second frame contains only the ambient
radiation information. By subtracting the second frame from
the first frame, a new image is formed that contains only
the information from the illuminator signal. The resulting
image can then be used by the conventional eye tracker
25 system to compute the direction of eye gaze even in the
presence of an ambient IR source.